ER Site No. 86: Firing Site (Bldg 9927)

ADS: 1335
Operable Unit: Southwest Test Area

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Site History

ER Site 86 is in the northern portion of Thunder Range. It consists of one firing site, a range control station and instrumentation building (Building 9927), and auxiliary support facilities, all built in the early 1960s. The site was used for testing involving weapons systems components and explosives systems, and for conducting explosive technology research. The Firing Site is an area which measures 35 feet by 55 feet on the north side of Building 9927. Tests conducted at this site may have involved up to 100 pounds of high explosive (HE). An average test involved the detonation of an equivalent of 7 - 8 pounds of trinitrotoluene (TNT). Concrete blast shield blocks were used to contain the blast forces during these tests. Between 140 and 150 tests were conducted annually during the 1980s. Most of the testing equipment has been removed and testing is not expected to be reactivated. The Comprehensive Environmental Assessment and Response Program (CEARP) and the Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) mention that depleted uranium (DU) might have been dispersed during tests. However, that information is in error. The general types of testing conducted at this site are described below.

Explosively Driven Generator Tests

Explosively driven ferro-electric generator tests were the first type of testing conducted at ER Site 86. The tests involved less than 5 pounds of HE; the majority of these did not use more than a few ounces of HE. The generators may have been irradiated then exposed to explosive detonations to see if they remained operational. In this case, irradiated aluminum may have been dispersed.

Sabotage Test - Shipping Cask Tests

Tests were conducted from 1979 to 1981 to determine how much radioactive material would be released from a terrorist attack on a nuclear fuel rod shipping cask.

During the tests, a 1/4 scale simulated fuel rod shipping cask (measuring approximately 3 feet long) was placed inside a chamber. Inside the lead cask, DU, zirconium alloy, and stainless steel were used as the simulated fuel. An explosive device was placed outside the chamber and fired into the cask through a portal in the containment chamber, which penetrated the shipping cask. The HE combustion by-products were not contained. The DU and metals used inside the cask were contained, however, and were completely removed after the test. Sandia Health Physics surveyed and cleaned the chamber after the tests to ensure that no radioactive material remained.

Gravel Gerty Tests

The Gravel Gerty tests were conducted just north of Building 9927 to determine if a roof composed of wire mesh and covered with a thick layer of gravel could withstand an explosive detonation and still contain the radioactive material in the room under this roof system. The system was designed to prevent the dispersion of radioactive material if an accidental detonation of the explosives in a nuclear weapon were to occur during disassembly activities. A scale model of a Gravel Gerty was constructed and tested up to 4 times. A rock layer, which was in the upper portion of the structure, was replaced after each test. The tests involved detonating a small explosive charge inside the chamber and monitoring the cask to determine if tracers inside the chamber were released to the outside of the chamber. DU may have been involved in the final test, after which the test structure was dismantled and removed.

Other tests

In another type of test, antimony oxide tracers, carbon black, and DU spheres were dispersed or vaporized with a small explosive charge. The DU tests were conducted in a metal, 6-foot diameter, spherical containment chamber that was located north of Building 9927. The chamber contained the materials which were detonated. The chamber was fitted with High Efficiency Particulate Air (HEPA) filters and sampling ports for monitoring. Following the DU test, the residues were removed from the chamber, then the chamber was cleaned with an acid solution.

There were also some explosive tests using a propellant designed for the gas fracturing of boreholes conducted at the firing site.

The terrain around ER Site 86 is relatively flat. Depth to ground water is unknown. Vegetation consists primarily of sage and tumbleweeds.

Constituents of Concern

DU
Beryllium
HE
Lead

Current Hazards

There are no current hazards at this site related to contamination of the surface or subsurface soils.

Current Status of Work

The RCRA Facility Investigation (RFI) Work Plan was completed in 1996 and was submitted for approval. A voluntary corrective measure (VCM) with confirmatory sampling was completed in 1996.

A confirmatory sampling no further action (NFA) proposal was submitted to the New Mexico Environment Department (NMED) in January 1997. A Request for Supplemental Information (RSI) was received from NMED in June 1999. A response to the RSI was submitted in September 1999 agreeing to additional sampling. NMED indicated that Site 86 is appropriate for NFA petition on April 25, 2001. The NFA was approved by NMED on November 19, 2001, after completing the public review and permit modification process.

Future Work Planned

No future work is planned.

Waste Volume Estimated/Generated

The VCM in May 1996 had generated two 55-gallon drums of radioactive waste.

Information for ER Site 86 was last updated Jan 22, 2003.